

CLAIMS

What is claimed is:

1. A DSR system comprising:

a client to send connection requests, receive displayable content, and transmit speech feature data to a server;
a gateway coupled between the client and the server to support data communication between the client and the server; and
a server to receive the speech feature data, perform speech recognition on the speech feature data, and transmit displayable content to the client.

2. A DSR system in accordance with claim 1, wherein said client further includes:

a client wrapper API to interface with a DSR client browser;
a DSR frame constructor coupled to the client wrapper API to construct DSR frames;
a DSR payload wrapper coupled to the DSR frame constructor to construct DSR payload packets from the DSR frames; and
a DSRML client transceiver to receive displayable content and to send an initial connection request to the server.

3. A DSR system in accordance with claim 2, wherein said client further includes:

a client transmission/recognition adapter to adjust transmission control conditions of the DSR

payload wrapper and to control flag bits needed for speech recognition according to transmission/recognition parameters; and

 said DSR payload wrapper to add flag bits to the DSR payload packets.

4. A DSR system in accordance with claim 1, wherein said client further includes:

 a client protocol stack having a TCP module supporting TCP protocol and an IP module supporting IP protocol.

5. A DSR system in accordance with claim 4, wherein said client protocol stack further includes a UDP module to support UDP protocol, the client further including:

 an RTP sender to send data using RTP through UDP/IP protocol stacks, said RTP sender including a buffer to store data packets having been sent out but not acknowledged by the server; said RTP sender re-transmitting the stored packets that are not acknowledged by corresponding RTCP packets till all DSR RTP outgoing packets are acknowledged; and

 said DSR payload wrapper passing the DSR payload packet to corresponding protocol stacks according to TCP/UDP selection in a set of transmission/recognition parameters.

6. A DSR system in accordance with claim 2, wherein said client further includes:

 a feature compressor coupled to the client wrapper API and the DSR frame constructor to compress speech feature data.

7. A DSR system in accordance with claim 1, wherein said server further includes:

a DSR payload de-wrapper to separate DSR speech feature data from transmission/recognition parameters;

a DSR frame extractor coupled to the DSR payload de-wrapper to extract DSR frames;

a server wrapper API coupled to the DSR frame extractor to interface with a DSR server browser; and

a DSRLM server transceiver to send displayable content and to receive an initial connection request from the client.

8. A DSR system in accordance with claim 7, wherein said server further includes a server stack having a UDP module to support UDP protocol, the server further including:

an RTP receiver to receive DSR payload packets using RTP through UDP/IP protocol stacks and extracting DSR payload from the DSR payload packets; and

a server transmission/recognition adapter coupled to the DSR payload de-wrapper and the DSR frame extractor to control frame extraction according to transmission parameters and flag bits for speech recognition.

9. A DSR system in accordance with claim 8, wherein said server further includes:

a frame de-compressor coupled to the server wrapper API to de-compress speech feature data.

10. A DSR system in accordance with claim 1 wherein said gateway supports wireless data communication.

11. A DSR system in accordance with claim 1 wherein said gateway supports wired data communication.

12. The DSR system in accordance with claim 1 further including a Web server coupled to the server via a network.

13. The DSR system of claim 1 wherein the client further includes:

a front-end engine for reducing noise and to extract the speed feature data.

14. The DSR system of claim 1 wherein the displayable content is represented as a DSRML document.

15. A method comprising:

receiving input speech data;

extracting speech features from the input speech data;

packaging the speech features into DSR frames in a DSR frame format;

collecting DSR frames to form a DSR payload; and

transmitting the DSR payload to a server for speech recognition processing.

16. The method of claim 15 further including:

increasing a TCP initial window;

adopting no slow-start restart;

applying TCP SACK ; and

passing the DSR payload to a transport protocol stack composed of TCP and IP.

17. A method comprising:

receiving a DSR payload packet;

de-wrapping DSR payload from the DSR payload packet and separating DSR speech feature data from transmission/recognition parameters;

extracting DSR frames from the DSR payload;

extracting speech feature data from the DSR frames; and

sending the speech feature data to a speech recognition engine and for recognition.

18. The method of claim 17 further including de-compressing the speech feature data.

19. A machine-readable medium having stored thereon executable code which causes a machine to perform a method for transmitting DSR data, the method comprising:

receiving input speech feature data;

extracting speech features from the input speech data;
packaging the speech features into DSR frames in a DSR frame format;
collecting DSR frames to form a DSR payload; and
transmitting the DSR payload to a server for speech recognition processing.

20. A machine-readable medium in accordance with claim 19, further comprising:

increasing a TCP initial window;
adopting no slow-start restart;
applying TCP SACK ; and
passing the DSR payload to a transport protocol stack composed of TCP and IP.

21. A machine-readable medium having stored thereon executable code which causes a machine to perform a method for receiving DSR data, the method comprising:

receiving a DSR payload packet;
de-wrapping DSR payload from the DSR payload packet and separating DSR speech feature data from transmission/recognition parameters;
extracting DSR frames from the DSR payload;
extracting speech feature data from the DSR frames; and
sending the speech feature data to a speech recognition engine for recognition.

22. A machine-readable medium in accordance with claim 21, further including decompressing the speech feature data.